

PATENT ABSTRACTS OF JAPAN

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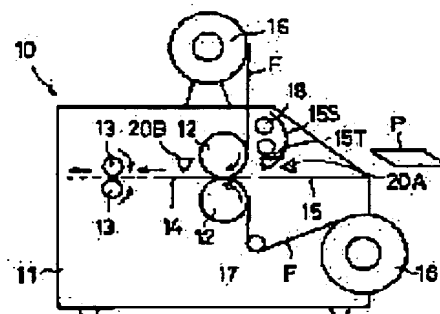
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(54) LAMINATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To control temperature within a narrow temperature region, and consequently obtain a favorable adhesion by a method wherein at least one temperature out of temperatures of pressure rollers, of laminating films and of a heat source and the temperature at the finish of contact bonding are detected so as to control the temperature of the heat source on the basis of these temperature detected.

SOLUTION: In a machine frame 11, pressure rollers 12 and second pressure rollers 13 are provided and infrared heaters 18 for heating laminating films F, each of which leaves an upper laminating film roll 16 and reaches the pressure roller 12, are equipped. In front of the infrared heaters 18, the sensor 20A of a temperature before contact bonding for detecting the temperature of the laminating film F before entering the pressure roll 12 or of the pressure roller 12 is provided. Further, between the pressure rollers 12 and the second pressure rollers 13, the sensor 20B of a temperature after contact bonding for detecting the temperature of the surface of the upper side laminating film F leaving the pressure roller 12 is provided. The outputs from both the sensors 20A and 20B are inputted to a temperature controlling device so as to control the temperatures of the infrared heaters 18 in response to the output sent from the temperature controlling device.



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CLAIMS

[Claim(s)]

[Claim 1] In the laminator which carries out heating sticking by pressure of a thermoplastic laminate film and a thermoplastic paper leaf object The heating heat source and the; above-mentioned sticking-by-pressure roller which stick the above-mentioned laminate film and a paper leaf object by pressure and which heat at least one side of the sticking-by-pressure roller of a pair, the; above-mentioned sticking-by-pressure roller, and a laminate film at least, The temperature sensor after sticking by pressure which detects the temperature of the lamination completion object which ended sticking by pressure of the temperature sensor before sticking by pressure which detects at least one temperature of a laminate film and a heating heat source, and the; above-mentioned paper leaf object; It is based on the detection temperature of the temperature sensor before this sticking by pressure, and the temperature sensor after sticking by pressure. The laminator characterized by having the temperature selector which controls the temperature of the above-mentioned heating heat source, and;

[Claim 2] It is the laminator with which, as for a sticking-by-pressure roller, it has two or more pairs in a laminator according to claim 1, and the temperature sensor after sticking by pressure is formed behind the sticking-by-pressure roller of the last stage.

[Claim 3] It is the laminator which it has two or more pairs with the sticking-by-pressure roller with which a sticking-by-pressure roller is not heated with the sticking-by-pressure roller with which the preceding paragraph is heated in the laminator according to claim 2, and is formed behind [that the temperature sensor after sticking by pressure is heated] the sticking-by-pressure roller of the last stage.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the Lord who does heating sticking by pressure of a thermoplastic laminate film and a thermoplastic paper leaf object at the laminator of the table top type for office work.

[0002]

[Description of the Prior Art] This kind of laminator is equipped with the laminate film and the heating heat source which sticks a paper leaf object by pressure and which heats the sticking-by-pressure roller, this sticking-by-pressure roller, or (reaching) the laminate film itself of a pair at least. In order to have pasted up the laminate film and the paper leaf object good, while it was indispensable to have controlled the temperature of a laminate film correctly, and for this reason these people heated the laminate film before going into the sticking-by-pressure roller, that temperature was detected before going into a sticking-by-pressure roller, and the equipment which controls the temperature of a heating heat source was proposed based on this detection temperature (JP,62-196523,U). Although this equipment generally showed the good adhesive property, the heating location of a laminate film had constraint, and it needed delicate balance adjustment of the location of the class of heating heat source, a heating heat source, and a temperature sensor etc.

[0003]

[Objects of the Invention] Without asking a location, a class, etc. of heating heat source, this invention can control the temperature of a laminate film correctly to fitness more, and aims at obtaining the laminator with which a desirable adhesive property is therefore acquired.

[0004]

[Summary of the Invention] The result of having examined whether a more desirable result having been obtained if this invention detects film temperature at the point of a lamination throat in process in case it manages the temperature of a laminate film by trial and error, If not only the temperature of the laminate film before heating sticking by pressure but the skin temperature of the laminate film which heating sticking by pressure ended is detected and this is fed back to a heating heat source It is rare to be influenced by the class and location of a heating heat source, and it finds out that the most desirable result is obtained and is completed.

[0005] The heating heat source and; sticking-by-pressure roller with which the laminator of this invention sticks a laminate film and a paper leaf object by pressure and which heat at least one side of the sticking-by-pressure roller of a pair; sticking-by-pressure roller, and a laminate film at least, The temperature sensor after sticking by pressure which detects the temperature of the lamination completion object which ended sticking by pressure of the temperature sensor before sticking by pressure which detects at least one temperature of a laminate film and a heating heat source, and; paper leaf object; It is based on the detection temperature of the temperature sensor before this sticking by pressure, and the temperature sensor after sticking by pressure. It is characterized by having the temperature selector which controls the temperature of a heating heat source, and;

[0006] As for the temperature sensor after sticking by pressure, it is desirable to prepare behind the sticking-by-pressure roller of the last stage, when it has two or more pairs of sticking-by-pressure rollers, and when it has two or more pairs of the sticking-by-pressure roller with which the preceding paragraph is heated, and the sticking-by-pressure roller which is not heated, it is desirable to prepare behind the sticking-by-pressure roller of the last stage heated.

[0007]

[Embodiment of the Invention] Drawing 1 thru/or drawing 3 show the first operation gestalt which applied this invention to the table-top-type roller type laminator 10 for office work. The sticking-by-pressure roller 12 of a pair and the second sticking-by-pressure roller (sending-out roller) 13 of a pair are mutually supported in parallel by the machine frame 11. the flat surface which the sticking-by-pressure roller 12 of a pair and the second sticking-by-pressure roller 13 of a pair are the physical relationship which contacts mutually, respectively, and contains both line of contact -- abbreviation -- it is prepared and a rotation drive is carried out in the direction of an arrow head by the drive which is not illustrated so that the level delivery flat surface 14 may be constituted. The entrance side (opposite side of the second sticking-by-pressure roller 13) of the sticking-by-pressure roller 12 is mostly located on the delivery flat surface 14, and the guide plate 15 which guides the paper leaf object P which should be fastened between the laminate films which make a pair is formed in it.

[0008] You make it caudad located in a machine frame 11 with the upper part of the sticking-by-pressure roller 12 of a pair, and the laminate film roll 16 of a pair is mutually supported in parallel, respectively. The laminate film F which came out of the upper laminate film roll 16 is the form which carries out an abbreviation rectangular cross, it is twisted around the direct upper sticking-by-pressure roller 12, changes 90 degrees of directions into the delivery flat surface 14, and reaches it along the delivery flat surface 14 after that at the second sticking-by-pressure roller 13. Through a guide idler 17, similarly, the laminate film F which it let out from the downward laminate film roll 16 is the form which carries out an abbreviation rectangular cross at the delivery flat surface 14, it is twisted around the downward sticking-by-pressure roller 12, changes 90 degrees of directions, and results in the second sticking-by-pressure roller 13 along the delivery flat surface 14 after that.

[0009] The machine frame 11 is equipped with the infrared-heating machine (heating heat source) 18 which heats the laminate film F which comes out of the upper laminate film roll 16, and results in the sticking-by-pressure roller 12. That is, this operation gestalt is a type which heats only one side of the laminate film F of the pair which fastens the paper leaf object P. A laminate film F is the thermoplastic thing which produces an adhesive property by heating, and does not ask the concrete structure.

[0010] Temperature sensor 20A before sticking by pressure which detects the temperature of the laminate film F (or sticking-by-pressure roller 12) before going into the sticking-by-pressure roller 12 ahead of this infrared-heating machine 15 is prepared. This temperature sensor 20A before sticking by pressure detects the skin temperature of a laminate film F through tunnel path 15T prepared in reflector 15S of the infrared-heating machine 15.

[0011] Moreover, between the sticking-by-pressure roller 12 of a pair, and the second sticking-by-pressure roller 13, temperature sensor 20B after sticking by pressure which detects the skin temperature of the laminate film F of the bottom which came out of the sticking-by-pressure roller 12 is prepared. It is inputted into a temperature controller (temperature selector) 21, and this temperature controller 21 controls the temperature of the infrared-heating machine 18 according to the output of both the sensors 20A and 20B so that the output of this temperature sensor 20A before sticking by pressure and temperature sensor 20B after sticking by pressure is shown in drawing 3, respectively.

[0012] On the occasion of use, this roller type laminator 10 of the above-mentioned configuration is energized in the infrared-heating vessel 18 through a temperature controller 21, and heats the upper laminate film F. The paper leaf object P is carried on a guide plate 15, and is put between the sticking-by-pressure rollers 12 of a pair. During operation preparation, it is detected that the temperature of a laminate film F turned into suitable temperature, and maintenance management is carried out by temperature sensor 20A before sticking by pressure during at the temperature. If operation is started, the rotation drive of the sticking-by-pressure roller 12 and the second sticking-by-pressure roller 13 is carried out, and the up-and-down laminate film F will be sent in the direction of an arrow head, and will carry out heating sticking by pressure of the paper leaf object P between the films of these upper and lower sides. Temperature sensor 20B after sticking by pressure detects the skin temperature of the lamination completion object of the top after fixed distance passage and immediately after carrying out heating sticking by pressure of the paper leaf object P, and feeds back the detection temperature to a temperature controller 21.

[0013] A temperature controller 21 judges the operation situation of a laminator 10, and controls the temperature of the infrared-heating machine 18 using at least one side of the output of temperature sensor 20A before sticking by pressure, and temperature sensor 20B after sticking by pressure, or both sides. That is, during operation preparation, since there is no output of temperature sensor 20B after sticking by pressure as a matter of fact, it is an output of only temperature sensor 20A before sticking by pressure, and controls the temperature

of the infrared-heating machine 18. On the other hand, the temperature of the infrared-heating machine 18 is mainly controlled by the continuous-running condition using the output of temperature sensor 20B after sticking by pressure. Moreover, when operation spacing opens, the quiescent time and operation time are taken into consideration, weighting of the both sides of the output of temperature sensor 20A before sticking by pressure and temperature sensor 20B after sticking by pressure is carried out, they are used, and the temperature of the infrared-heating machine 18 is controlled. Thus, by detecting not only the temperature of the laminate film F before carrying out heating sticking by pressure of the paper leaf object P but the skin temperature of the lamination completion object which sticking by pressure ended, and controlling the temperature of the infrared-heating machine 18 (laminate film F) based on these, the temperature of a laminate film F can be managed in a more desirable narrow temperature region, and the adhesive property therefore stabilized is acquired. It is desirable especially to mainly control the temperature of the infrared-heating machine 18 by the continuous-running condition with the output of temperature sensor 20B after sticking by pressure.

[0014] Drawing 4 applies this invention to the roller type laminator 10 of the type which heats the laminate film F of the pair which fastens the paper leaf object P, respectively. The infrared-heating machine 18, front [sticking by pressure] temperature sensor 20A, and temperature sensor 20B after sticking by pressure are the points which it has also about the downward laminate film F, and that of the difference with the 1st operation gestalt are the same as that of the 1st operation gestalt except this. In drawing 4, although one pair of temperature sensor 20B after sticking by pressure is prepared in the upper and lower sides of the passage flat surface of a lamination completion object, temperature sensor 20B after sticking by pressure may be prepared only in up-and-down one side. Moreover, when two or more steps of sticking-by-pressure rollers are formed, as for temperature sensor 20B after sticking by pressure, preparing in the last stage is desirable, and when the sticking-by-pressure roller (group) with which the preceding paragraph is heated, and the sticking-by-pressure roller (group) with which the latter part is not heated are formed, it is desirable to prepare in the last stage of the sticking-by-pressure roller heated. Of course, the number of stages of a sticking-by-pressure roller is not asked.

[0015] Drawing 5 thru/or drawing 9 show another installation gestalt of the heat source which heats a laminate film F, front [sticking by pressure] temperature sensor 20A, and temperature sensor 20B after sticking by pressure. The example and drawing 6 which drawing 5 makes the sticking-by-pressure roller 12 hollow, arrange the heat source 22 which becomes the interior from heater wires, and detect the temperature of the sticking-by-pressure roller 12 by temperature sensor 20A before sticking by pressure. The heat source 22 of the shape of a field which heats the laminate film F conveyed from the upper and lower sides between sending roller 12' and the sticking-by-pressure roller 12, respectively is arranged. The example and drawing 7 which detect the temperature of a heat source 22 by temperature sensor 20A before sticking by pressure. The perimeter of the sticking-by-pressure roller 12 and the heat source 22 of a series of shape of a field which heats the laminate film F from the sticking-by-pressure roller 12 to the second sticking-by-pressure roller 13 are arranged. The example and drawing 8 which detect the temperature of a heat source 22 by temperature sensor 20A before sticking by pressure. The example and drawing 9 which arrange the infrared-heating machine 18 to the tooth-back side of the sticking-by-pressure roller 12 of a pair, respectively, and detect the temperature of the sticking-by-pressure roller 12 by temperature sensor 20A before sticking by pressure. It is the example of the sticking-by-pressure roller 12 of a pair which arranges the infrared-heating machine 18 up and down, and detects the temperature of the sticking-by-pressure roller 12 by temperature sensor 20A before sticking by pressure. Thus, the laminate film F itself is heated directly, and also heating of a laminate film F is heating the sticking-by-pressure roller 12 (or the second sticking-by-pressure roller 13), and can also be performed indirectly. The class of heat source which heats a laminate film F or (reaching) the sticking-by-pressure roller 12 is not asked.

[0016] And also in which operation gestalt, temperature sensor 20B after sticking by pressure is arranged just behind the sticking-by-pressure roller 12 or the second sticking-by-pressure roller 13, and measures the skin temperature of the laminate film F immediately after sticking by pressure for the paper leaf object P. The output of temperature sensor 20A before sticking by pressure and temperature sensor 20B after sticking by pressure is inputted into a temperature controller 21 like drawing 3, and the temperature of a heat source 22 is controlled by this feedback control system. Moreover, in these examples, the pack film PF which was beforehand fitted to the magnitude of the paper leaf object P, and was cut as a laminate film F is used.

[0017] Although each above-mentioned example is a type which fastens the paper leaf object P between the laminate films F of a pair, this invention can apply them altogether, if the type which fastens a laminate film

between the paper leaf objects of a pair, the type on which the paper leaf object of one sheet and the laminate film of one sheet are pasted up, the exfoliation type in which these permanent adhesion types and exfoliation are possible carry out heating sticking by pressure of a thermoplastic laminate film and a thermoplastic paper leaf object.

[0018]

[Effect of the Invention] Since the laminator of this invention detects the temperature of not only the temperature of the laminate film before carrying out heating sticking by pressure of the paper leaf object but the lamination completion object immediately after sticking by pressure and the temperature of a heat source is controlled based on both detection temperature, the temperature control of the laminate film can be carried out to a narrower temperature region, and a therefore more desirable adhesive property is acquired.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view showing the example of 1 appearance of the table-top-type laminator for office work which applied this invention.

[Drawing 2] It is the sectional view showing 1 operation gestalt of the laminator of this invention.

[Drawing 3] It is the block diagram showing the feedback system from a temperature sensor to a heat source.

[Drawing 4] It is the sectional view showing another operation gestalt of the laminator of this invention.

[Drawing 5] It is the conceptual diagram showing still more nearly another operation gestalt of the laminator of this invention.

[Drawing 6] It is the conceptual diagram showing another operation gestalt of the laminator of this invention.

[Drawing 7] It is the conceptual diagram showing another operation gestalt of the laminator of this invention.

[Drawing 8] It is the conceptual diagram showing another operation gestalt of the laminator of this invention.

[Drawing 9] It is the conceptual diagram showing another operation gestalt of the laminator of this invention.

[Description of Notations]

10 Roller Type Laminator

11 Machine Frame

12 13 Sticking-by-Pressure Roller

14 Delivery Flat Surface

15 Guide Plate

16 Laminate Film Roll

18 Infrared-Heating Machine (Heat Source)

20A Front [sticking by pressure] temperature sensor

20B After [sticking by pressure] temperature sensor

21 Temperature Controller

22 Heat Source

[Translation done.]

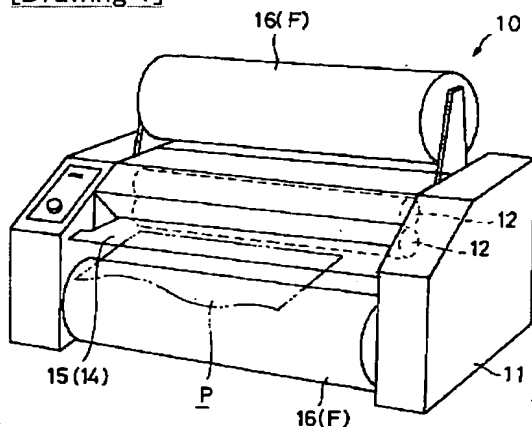
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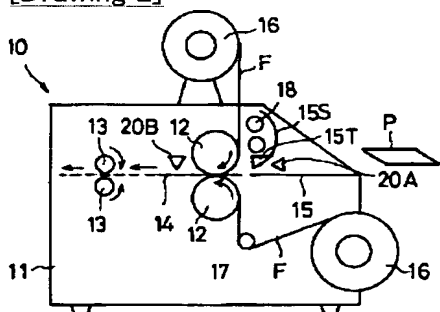
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DRAWINGS

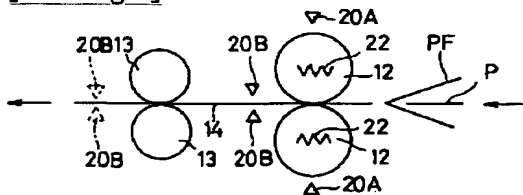
[Drawing 1]



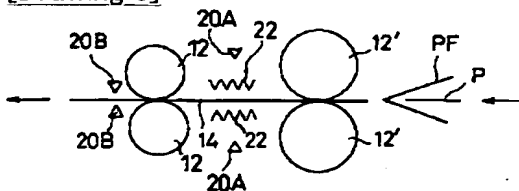
[Drawing 2]



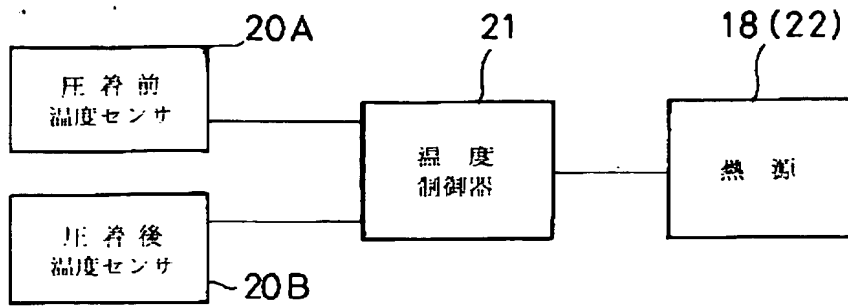
[Drawing 5]



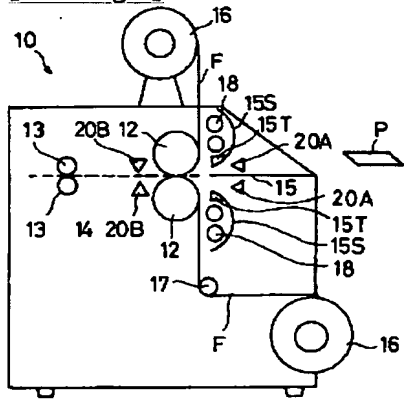
[Drawing 6]



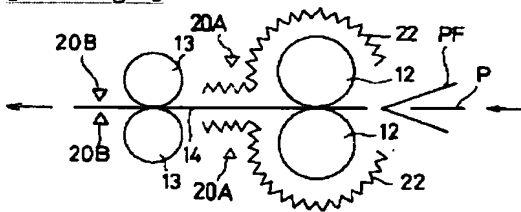
[Drawing 3]



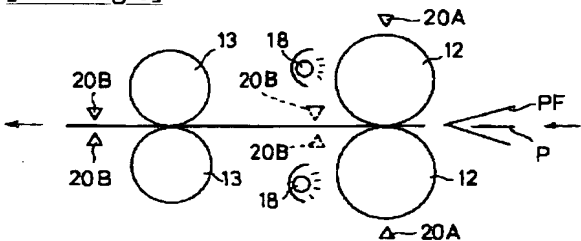
[Drawing 4]



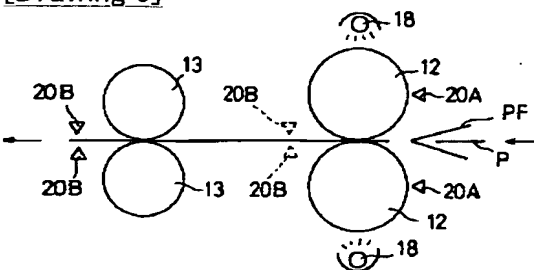
[Drawing 7]



[Drawing 8]



[Drawing 9]



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